

were added from a second dropping funnel over the course of two and a half hours. The resulting reaction mixture was subsequently polymerized at reflux for 2 hours.

5

The condenser was then swapped for a top-mounted distillation attachment. The temperature was raised to 160°C, during which the solvent was removed by distillation. Then reduced pressure was applied and the
10 reaction mixture was held at 160°C for a further 2 hours. This gave a melt of the polyacrylate (A2), which solidified when poured out onto aluminum foil and after grinding gave blocking-resistant powders at 25°C. The resin had a melting point of 66°C and a glass
15 transition temperature of 58°C, measured by means of the DSC method.

Examples 1 to 7

20 The preparation of inventive powder coating materials

In a heatable laboratory kneading device, binder mixtures were produced by kneading under nitrogen at 100°C and were then discharged onto aluminum foil and
25 left to cool. Thereafter the binder mixtures were ground in a laboratory hammer mill and screened to a particle size of <60 µm. The powder coating materials

obtained were scattered onto clean steel panels, using a sieve, in an amount so as to give film thicknesses of about 80 μm after curing. The steel panels were then placed on a temperature-regulated hotplate at a temperature of 130°C and heated for 5 minutes; during that time the powder coating melted to give a layer which flowed out well, and which then remained on the hotplate and was irradiated for 2 minutes using a quartz UV lamp having an emission maximum of about 365 nm and an energy output (measured in the plane of the coating films) of 17 mW/cm². Thereafter, the specimens were taken from the hotplate, cooled, and one hour later rubbed 30 times with a cotton pad soaked in acetone. The table gives an overview of the composition of the powder coating materials of the invention and their solvent resistance.

Table: The composition and solvent resistance of the inventive powder coating materials (Examples 1 to 7)

Example No.	Polyacrylate (A)	Polyester (B)	Photoinitiator	Acetone resistance
1	A1/140 g	B1/60 g	-	0
2	A1/140 g	B2/60 g	-	2
3	A1/140 g	B2/60 g	6 g BDMK	0
4	A2/140 g	B1/60 g	-	4

5	A2/140 g	B1/60 g	6 g BDMK	2-3
6	A2/140 g	B2/60 g	-	4
7	A2/140 g	B2/60 g	6 g BDMK	3

BDMK = benzil dimethyl ketal

Ratings for acetone resistance: 0 = no attack to 5 =
soluble, uncrosslinked

5

It was found that the use of both structural units I
and photoinitiator groups II gave the best results.